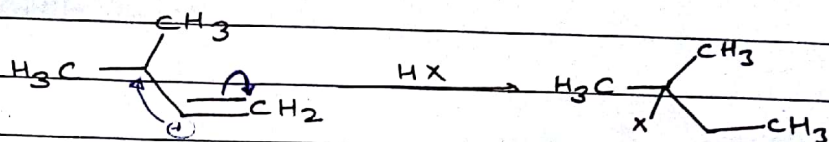


## Important Reactions In Organic Chemistry

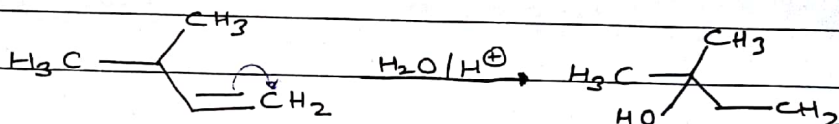
### 1. Hydrohalogenation



Unsymmetrical  
Alkene

Alkyl Halide with  
rearrangement.

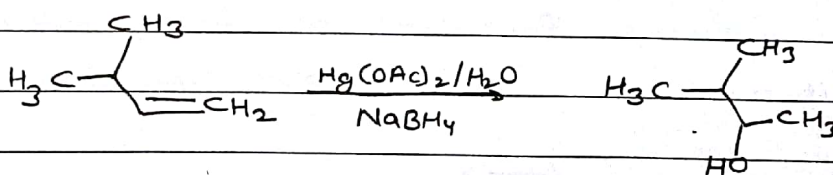
### 2. Hydration



Unsymmetrical  
Alkene

Alcohol with  
rearrangement.

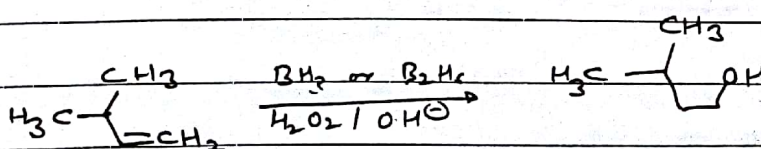
### 3. Oxymercuration demercuration



Unsymmetrical  
Alkene

Alcohol without  
rearrangement

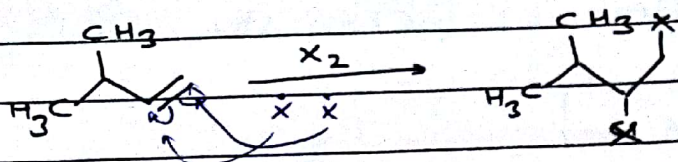
### 4. Hydroboration oxidation



Unsymmetrical Alkene

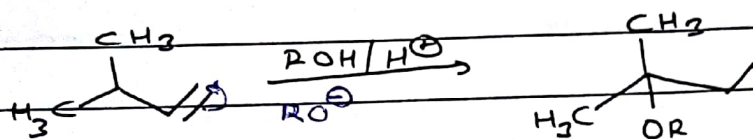
Alcohol without  
rearrangement  
resembling  
Anti-Markovnikov rule

## 5. Halogenation



Allyl dihalide w/o rearrangement

## 6. Addition of Alcohol



Ether with rearrangement.

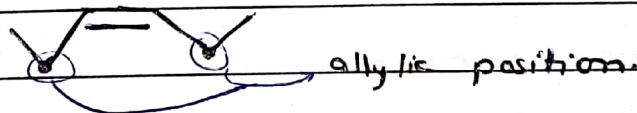
## 7. NBS



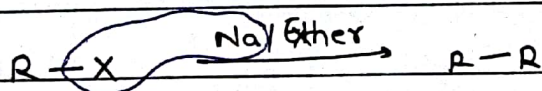
Allyl or Benzy  
group

Replacement of allylic or  
benzylic H with Br.

NBS causes formation of free radical at allylic position on which  $\text{Br}^\bullet$  attacks.



## 8. Wurtz Reaction



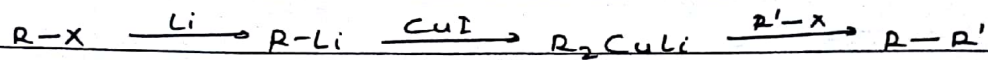
Primary or

Alkane

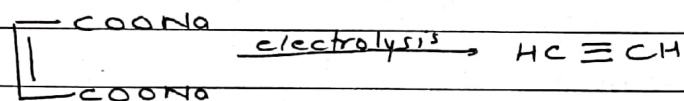
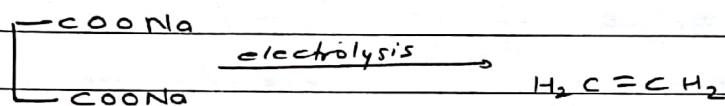
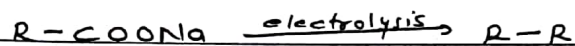
Sec. Allyl halide



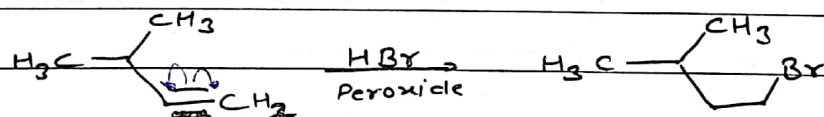
9. Corey-House alkane synthesis



10. Kolbe electrolysis

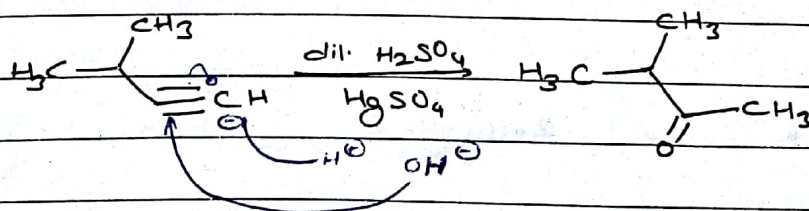


11. Anti-Markownikoff Concept.



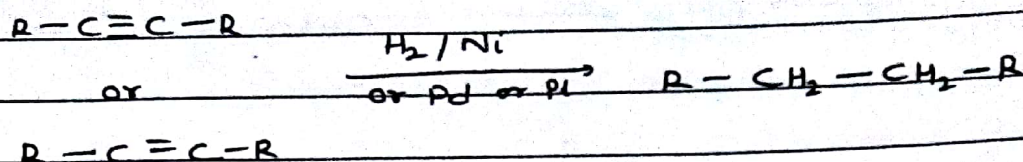
Alkyl bromide w/o rearrangement.

12. Hydration of Alkyne

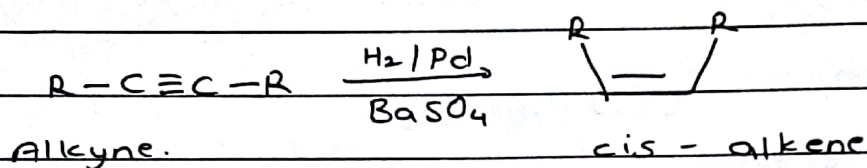


ketone w/o rearrangement

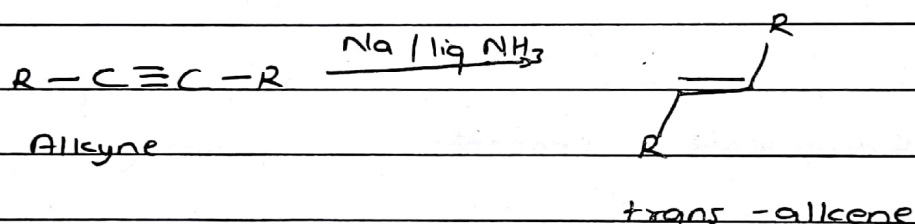
### 13. Hydrogenation



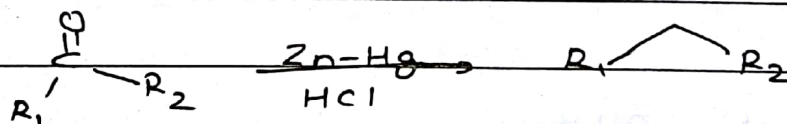
### 14. Lindlar's Catalyst



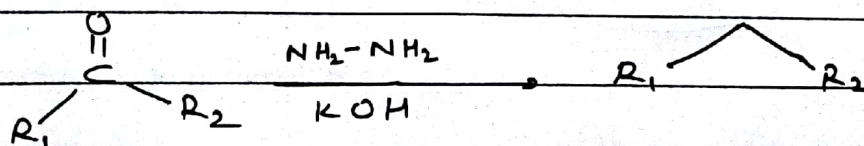
### 15. Birch Reduction



### 16. Clemmensen Reduction

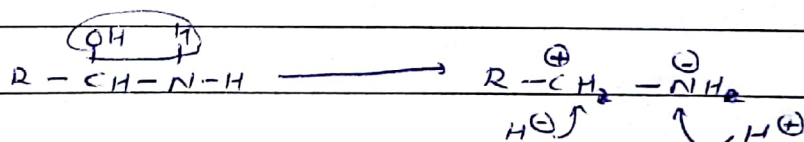
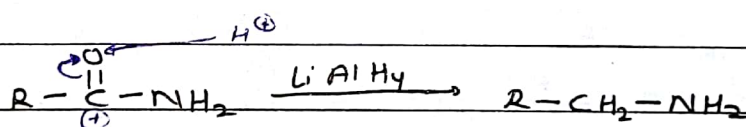
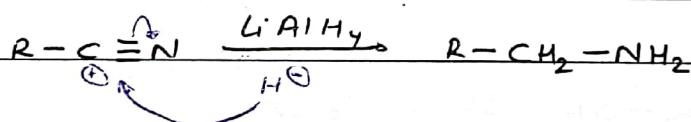
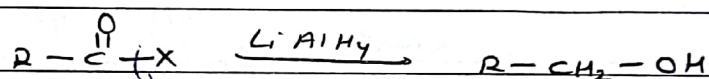
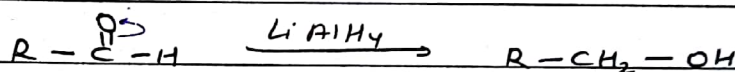
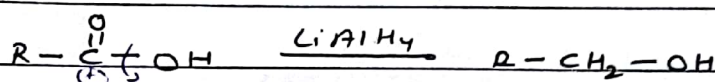
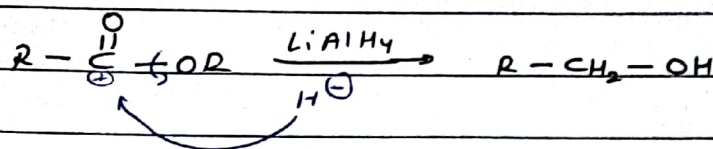
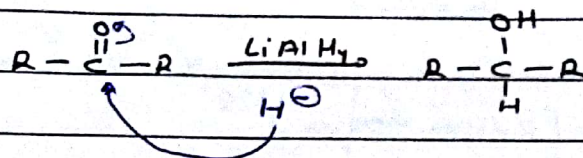


### 17. Wolf-Kishner Reduction

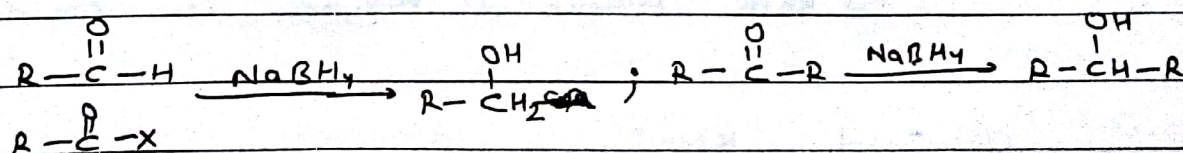




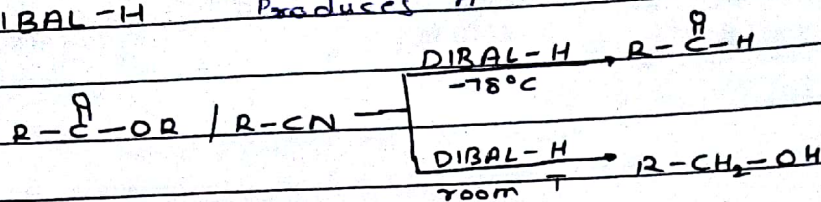
18.  $\text{LiAlH}_4$



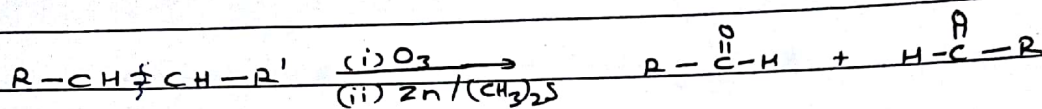
19.  $\text{NaBH}_4$



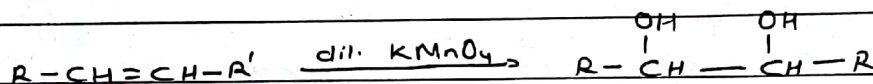
20. DIBAL-H Produces  $H^{\ominus}$



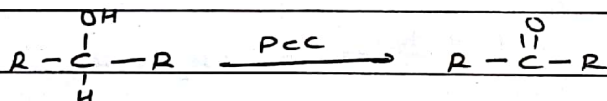
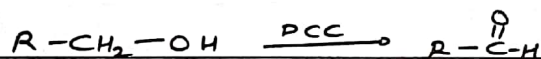
21. Ozonolysis



22. Hydroxylation



23. PCC



24.  $KMnO_4$

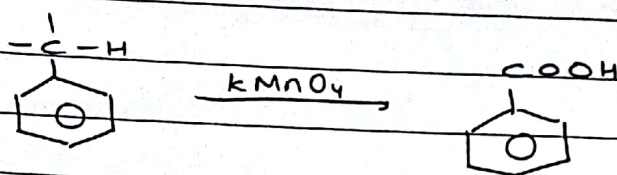
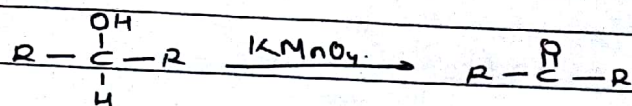
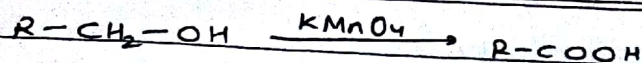
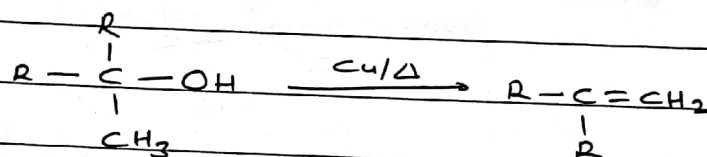
① HOT  $KMnO_4$

- ① Always Acid is formed if  $\alpha-H$  is present
- ② Both Alkene & Alkyne is oxidised.

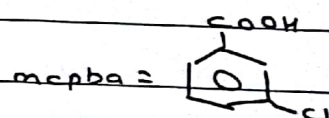
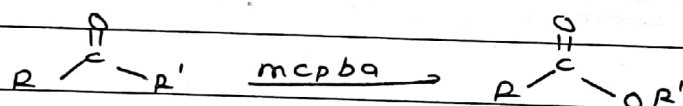
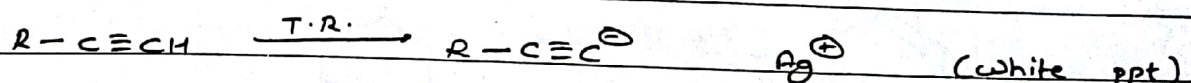
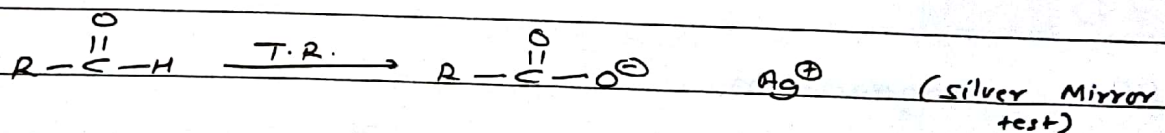
② Cold  $KMnO_4$

- ① Only Alkene reacts
- ② Always diketone is formed.

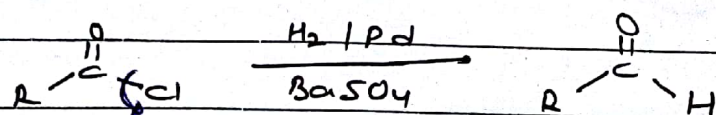


25.  $Cu/\Delta$ 

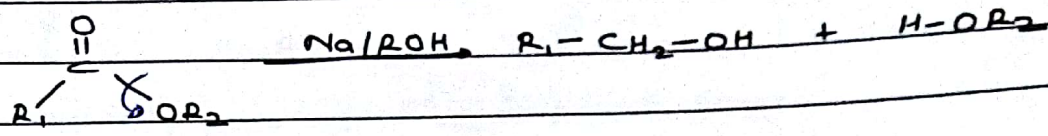
26. Baeyer-Villiger Oxidation

27. Tollen's Reagent  $Ag(CNH_3)_2^+$  oxidizer

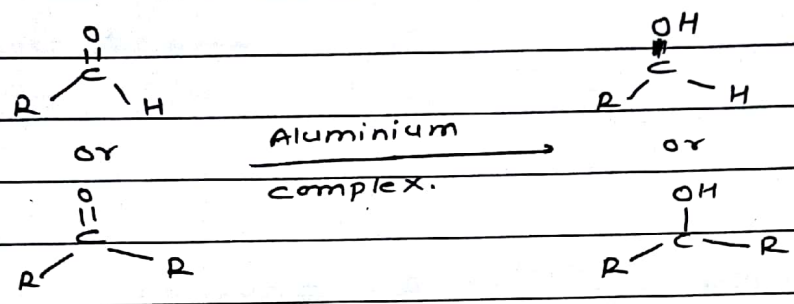
28. Rosenmund reduction



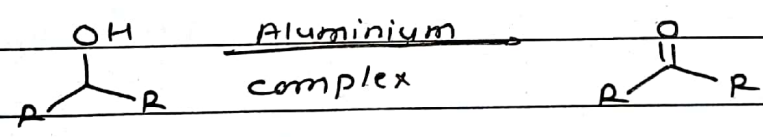
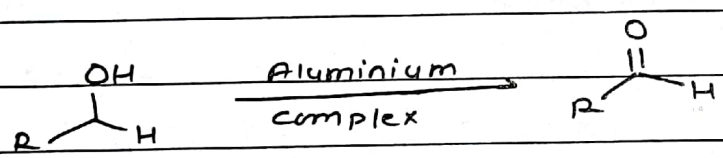
29. Bouveault - Blanc reduction



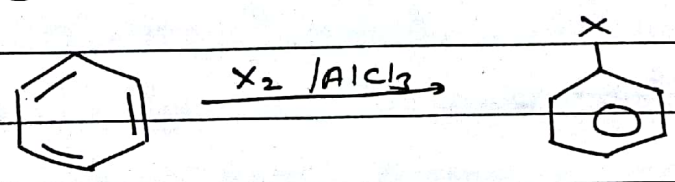
30. MPV reduction



31. Oppenauer oxidation

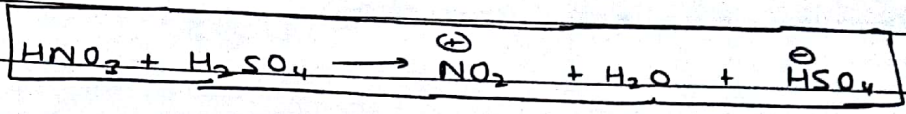
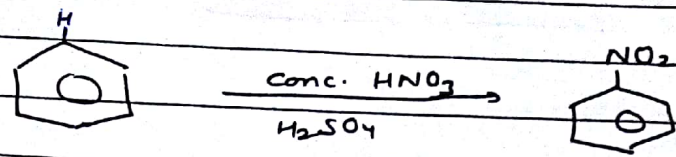


32. Halogenation

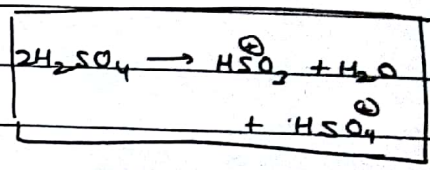
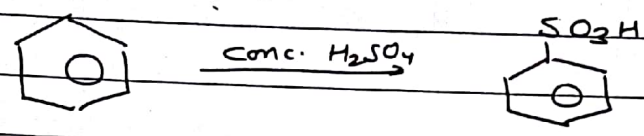




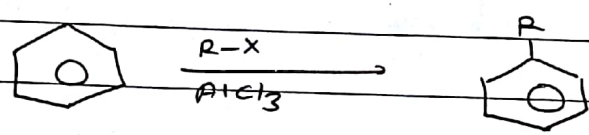
### 33. Nitration



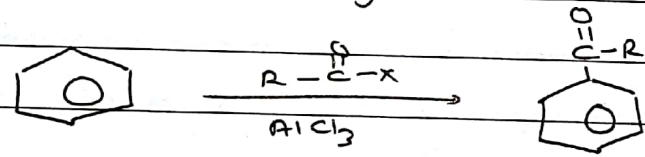
### 34. Sulphonation



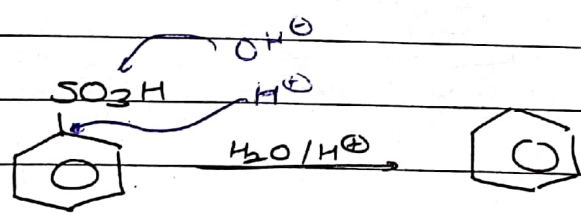
### 35. Friedel-Craft alkylation



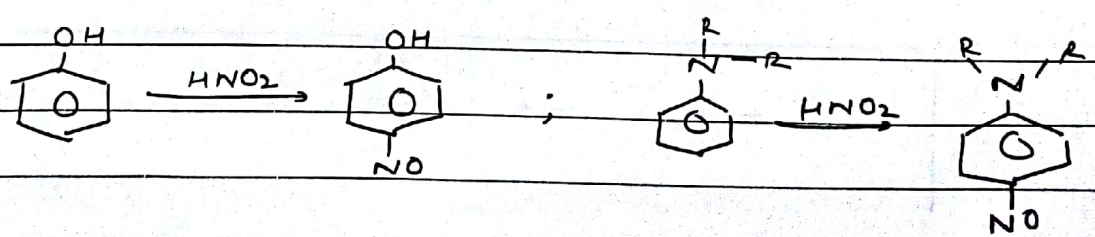
### 36. Friedel-Craft acylation

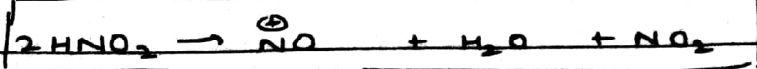


### 37. Protonation

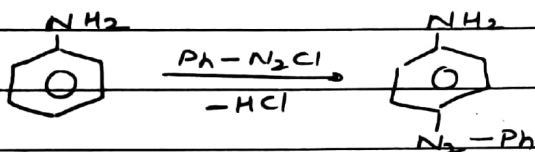
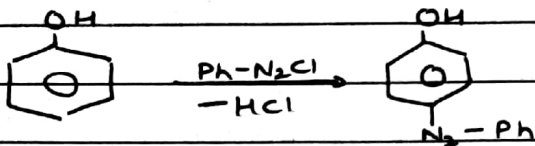


### 38. Nitrosation

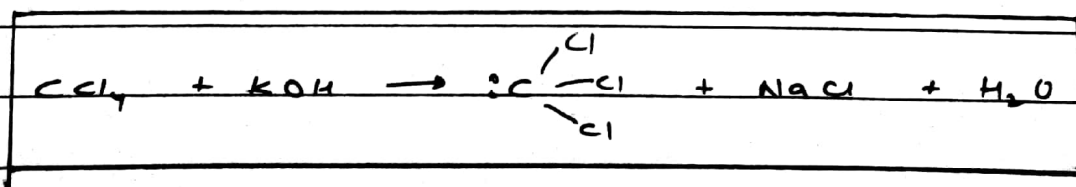
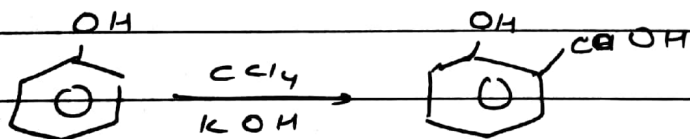
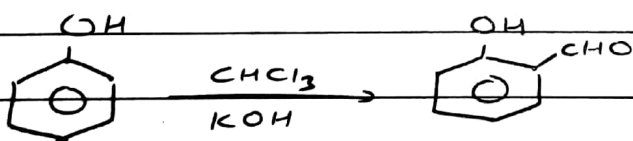
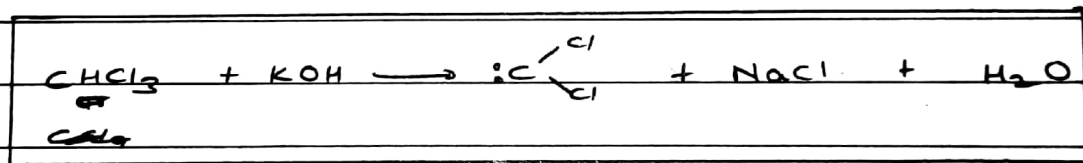




### 39. Diazo-coupling reaction

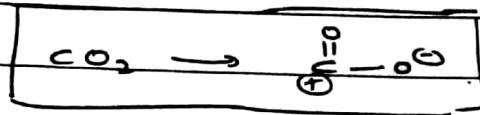
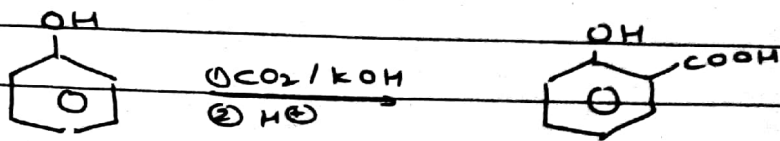


### 40. Reimer-Tiemann Reaction

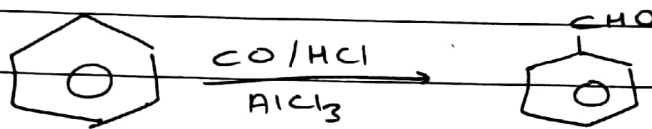




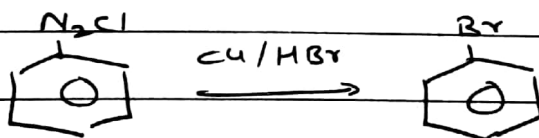
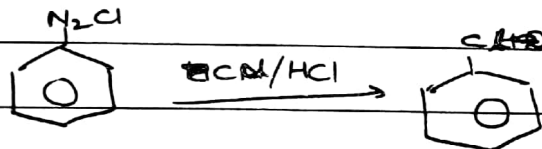
#### 41. Kolbe - Schmidt reaction



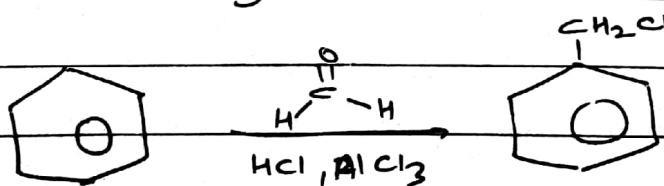
#### 42. Gattermann - Koch reaction



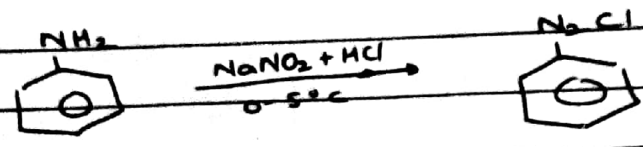
#### 43. Gattermann Reaction



#### 44. Chloromethylation

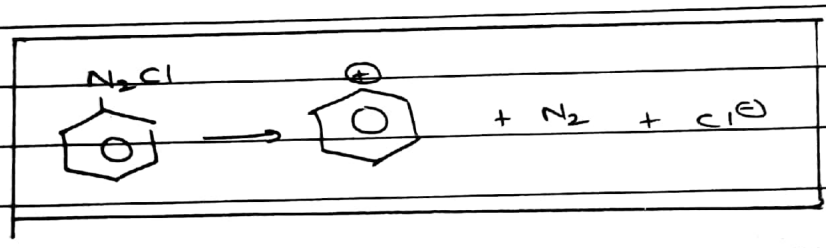
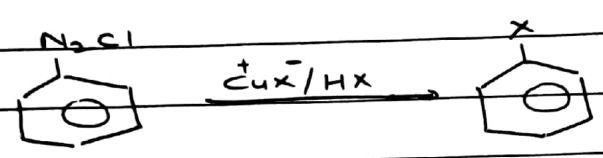


#### 45 Diazotization

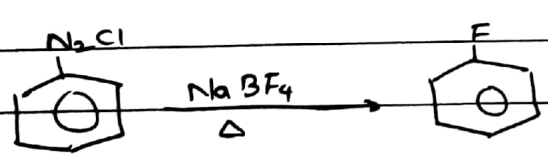


Aromatic diazonium salt.

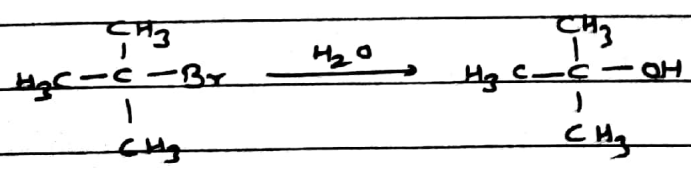
#### 46 Sandmeyer reaction



#### 47. Balz - Schiemann reaction



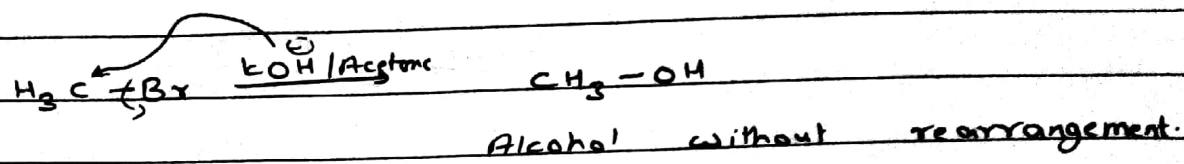
#### 48. $\text{S}_\text{N}1$ Reaction



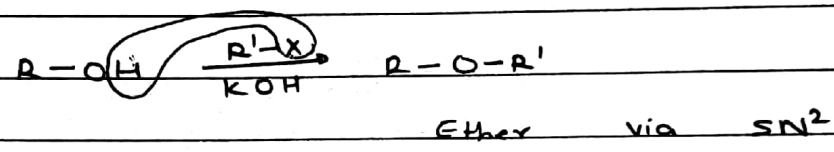
Alcohol with rearrangement



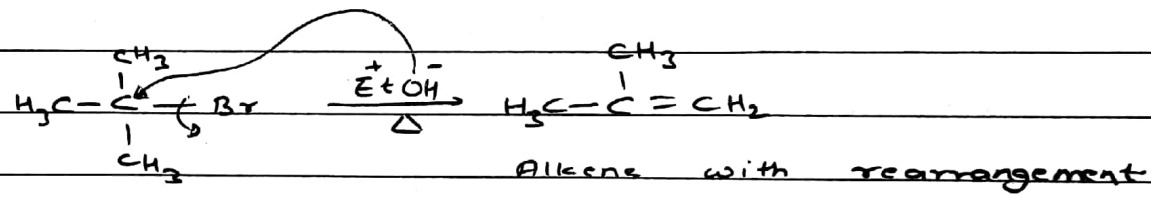
# 49. $S_N^2$ reaction



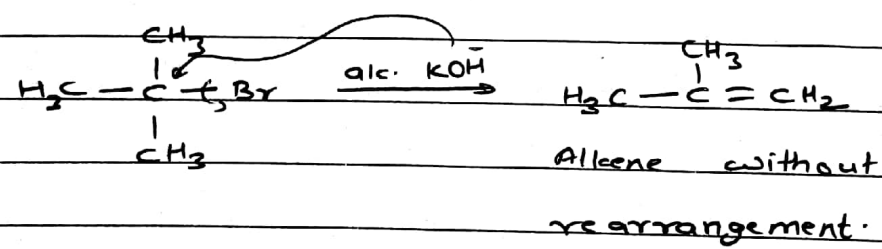
# 50. Williamson ether synthesis



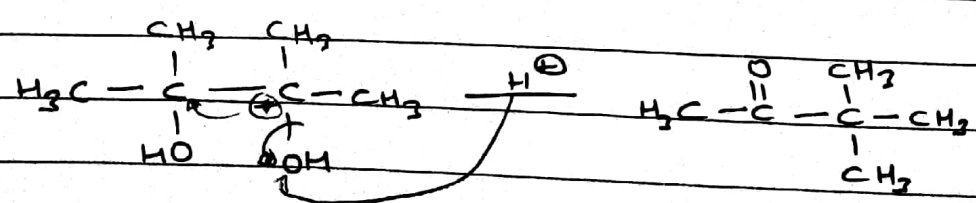
# 51. $E_1$ reaction



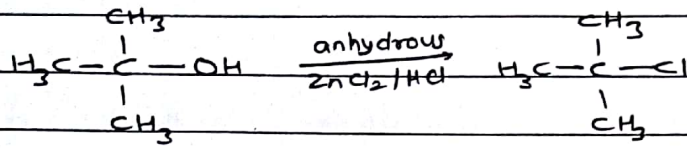
# 52. $E_2$ reaction



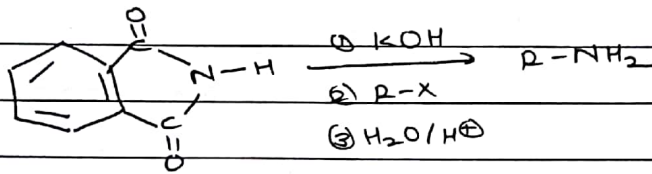
# 53. Pinacol-pinacolone rearrangement.



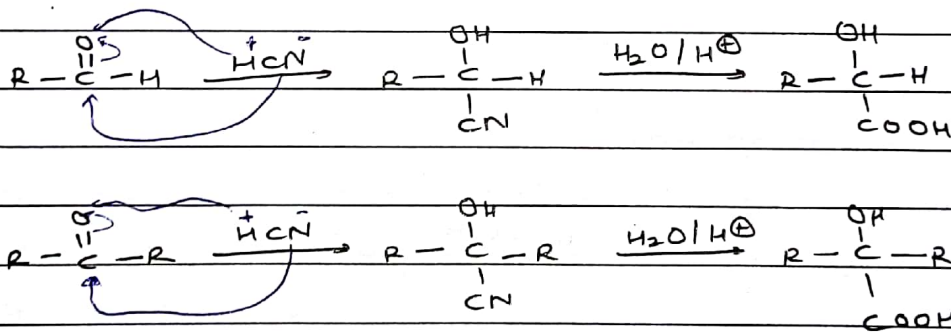
#### 54 Lucas Reagent



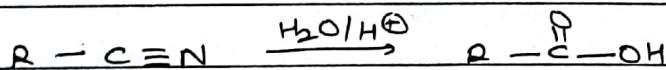
#### 55. Gabriel - phthalimide amine synthesis



#### 56. Cyanohydrin formation

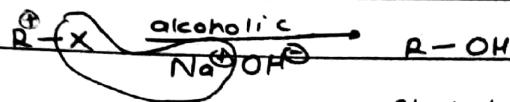


#### 57. Acid Hydrolysis



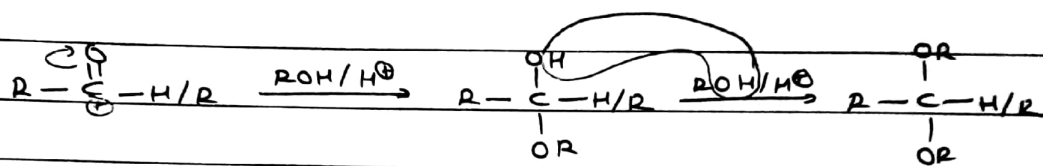


### 58. Dehydrohalogenation



Alcohol with rearrangement.

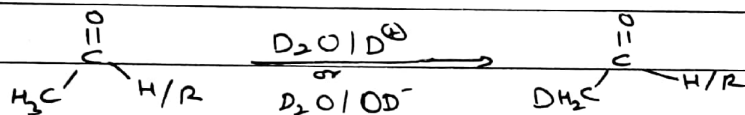
### 59. Acetal / Hemiacetal formation



Hemiacetal

Acetal.

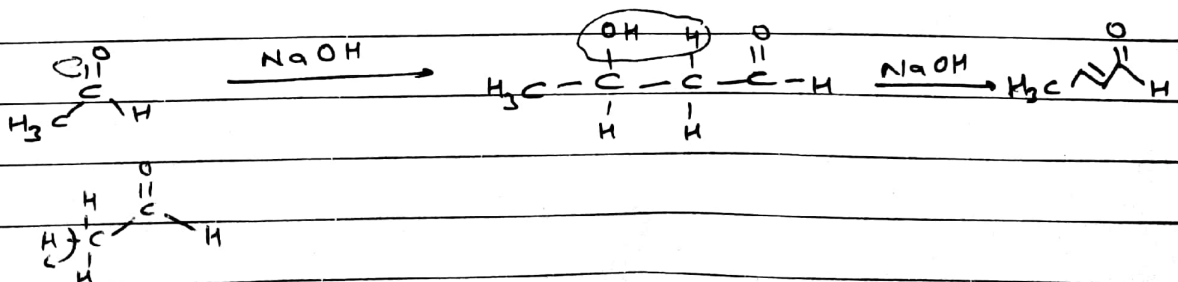
### 60 D-Exchange Reaction



Replacement of  $\alpha$ -H by 'D'.

### 61 Aldol Condensation

- ① Aldehyde / ketone with  $\alpha$ -H
- ② Base (like NaOH, KOH ... etc)
- ③ Pure / Impure  $\rightarrow$  Aldehyde & other  $\rightarrow$  Bigger ketone  $\rightarrow$  Smaller

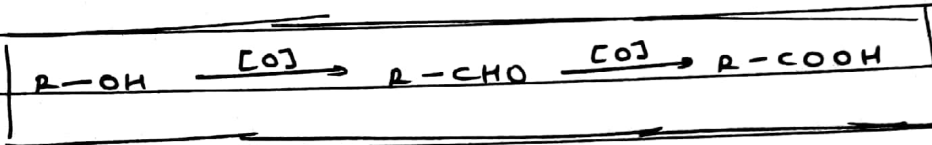


## 62. Cannizzaro Reaction

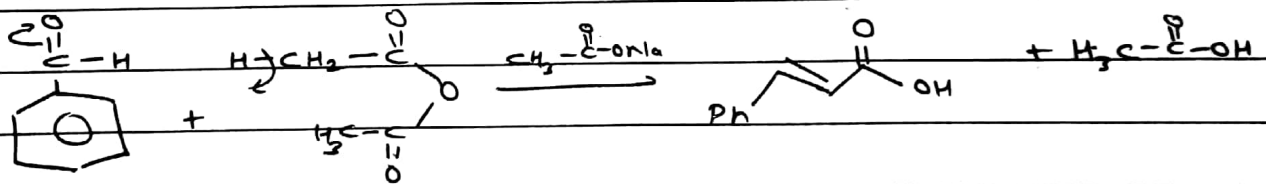
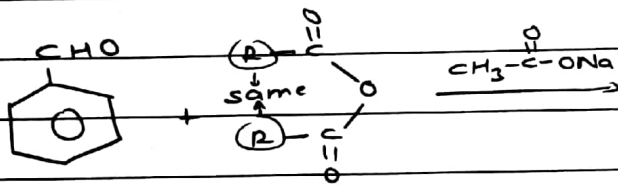
① Aldehyde without  $\alpha$  H

② Smaller  $\rightarrow$  oxidises

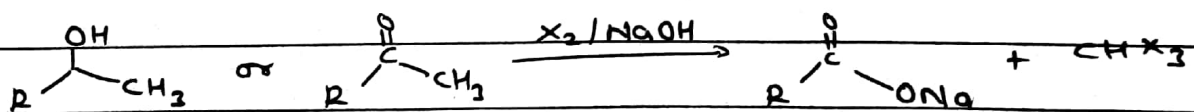
Bigger  $\rightarrow$  reduces.



## 63. PERKIN Reaction

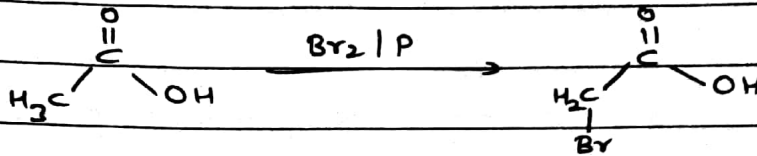


## 64. Haloform Reaction



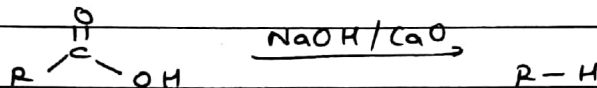


### 65. HVZ Reaction

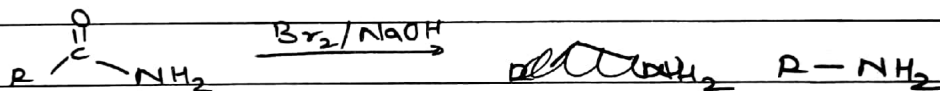


Replacement of  $\alpha\text{-H}$  with Br.

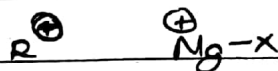
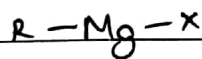
### 66. Decarboxylation Reaction



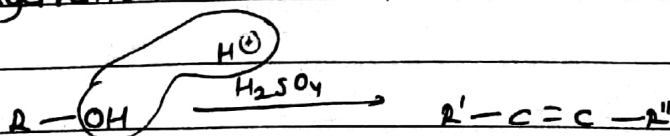
### 67. Hofmann Reaction



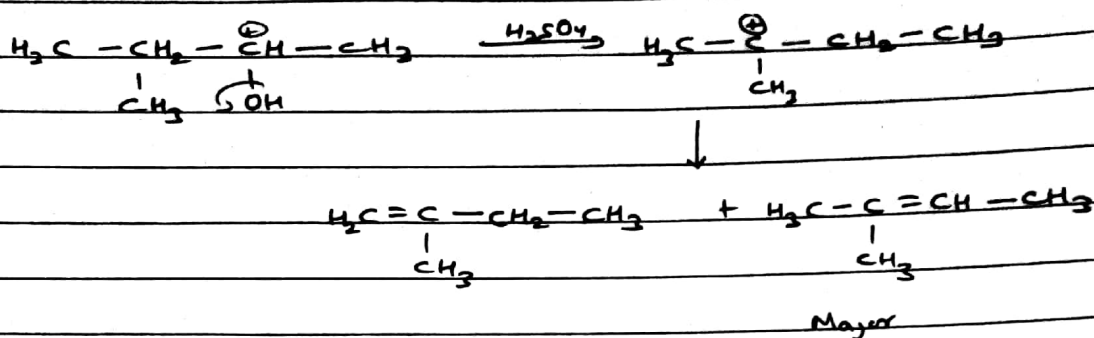
### 68. Grignard Reagent



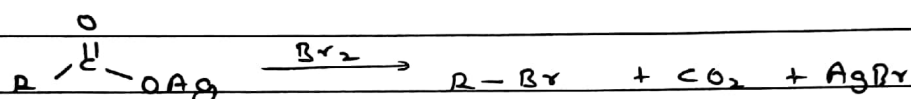
### 69. Dehydration of Alcohol



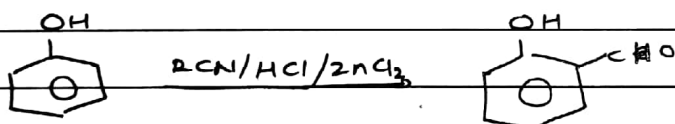
Alkene with rearrangement.



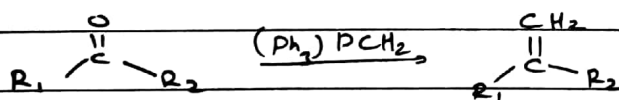
### 70. Hunsdiecker Reaction



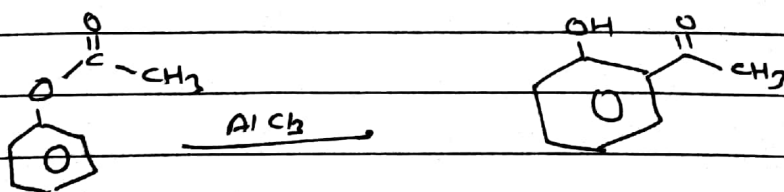
### 71. Hoesch Reaction



### 72. Wittig Reaction

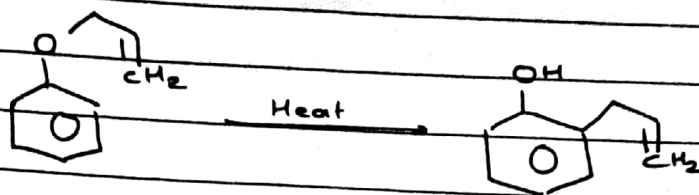


### 73. Fries rearrangement

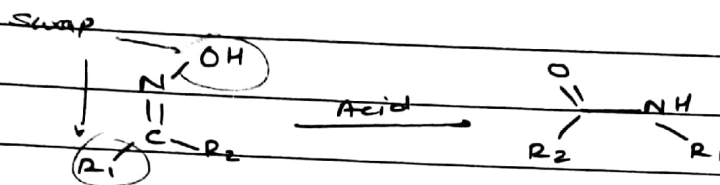




## 74 Claisen Rearrangement

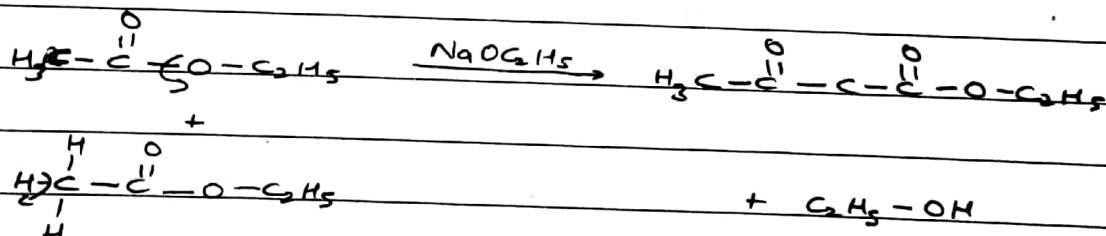


## 75 Beckmann Rearrangement



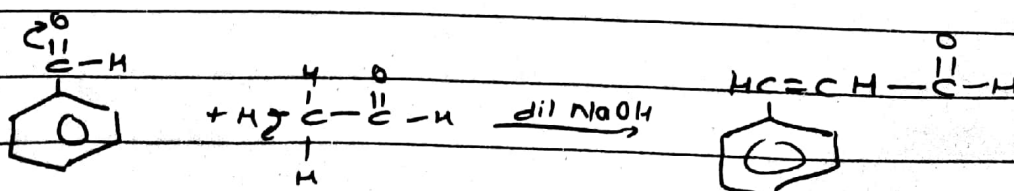
## 76 Claisen condensation

- ①  $R-\overset{\overset{O}{\parallel}}{C}-O-C_2H_5$  with  $\alpha H$ .
- ②  $NaOC_2H_5$



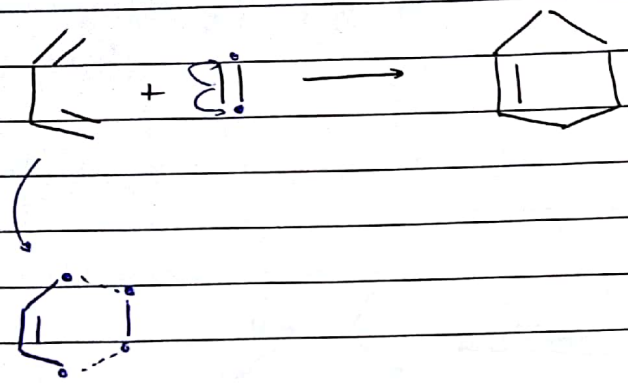
## 77. Claisen-Schmidt reaction

- ①  $Ph-CHO$
- ② Aldehyde / ketone with  $\alpha H$
- ③ dil.  $NaOH$

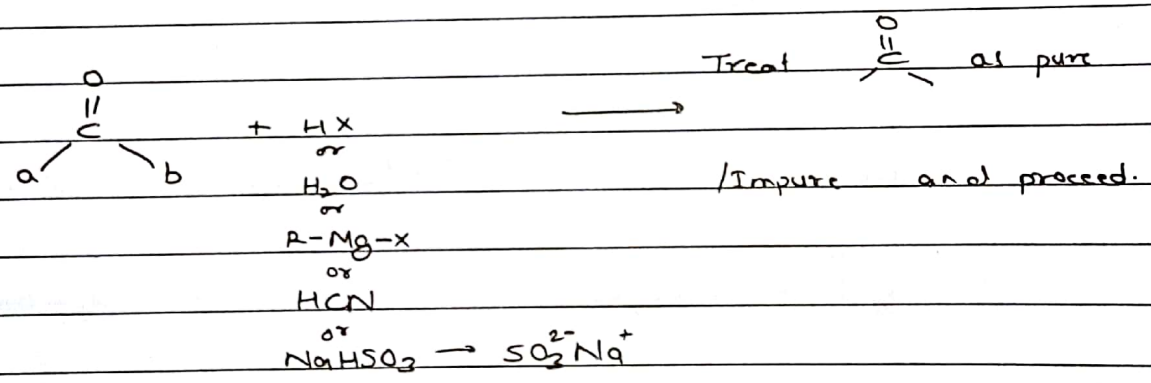


# 78. Diels-Alder reaction

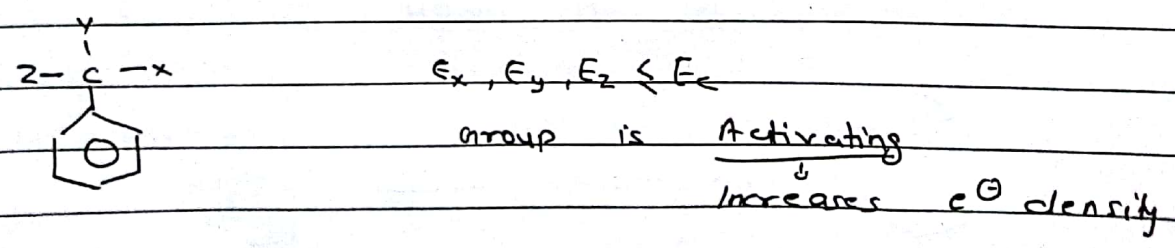
- ① conjugated diene
- ② Alkene or Alkyne

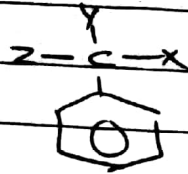


# 79. Nucleophilic Addition Reaction for carbonyl compounds.



# 80 Nucleophilic addition reaction for Aromatic compounds.





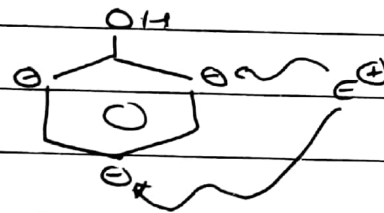
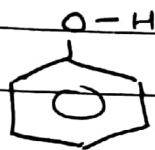
$$E_X, E_Y, E_Z > E_C \quad (\text{any one})$$

or

double bond with C, then  
group is deactivating  
↓  
decreases  $e^-$  density

e.g

①



$$E_H < E_{H^+}$$

So, OH is activating

① ortho & para is  
places where  $e^+$   
can attack.

②  $Nu^-$  can't attack.

②

